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The Effects of Child Birth Order and Number of Children on Mother's Supervision Beliefs and Practices

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Alyssa Schramm, B.A.; Thesis honors project for the degree of Bachelor of Science with an emphasis in Psychology

Abstract

Objective: This study aimed to examine (1) whether mothers' attitudes about supervision differ based on (a) the number of children in the home and (b) the birth order of the child; (2) whether mothers' reported supervision levels differ based on: (a) the number of children in the home and (b) the birth order of the child; and (3) whether children in families with more than one child sustain more injuries than children in families with fewer children.

Methods: Mothers of children ages 1-5 (n = 36) were interviewed approximately once a week over an 8 week period about their children's unintentional injuries and their supervision practices.

Results: Our study found that the number of children in the home was negatively related to the amount of auditory supervision provided by the mother. We also found that mothers' beliefs about the need for supervision was related to children's injury frequency such that more injuries were associated with mothers reporting decreased need for supervision of young children.

The Effects of Child Birth Order and Number of Children on Mothers' Supervision Beliefs and Practices

Unintentional injuries are the leading cause of death for children between the ages of 0 and 19. Indeed, approximately 12,175 children die annually as a result of accidental injuries (Borse, Gilchrist, Dellinger, Rudd, Ballesteros, & Sleet, 2008).The impact of unintentional injuries on children has led to the necessity that investigators study what factors can lead to injury, in order to prevent them.

There are several known contributors to accidental injuries in children. Child factors, such as the presence of a behavior disorder increase children's risk for injury. For instance, Schwebel et al. (2002) reported that males with Oppositional Defiant Disorder (ODD) and Attention Deficit Hyperactivity Disorder (ADHD) were significantly more likely to sustain injuries than males without these disorders. Over the two-year study, males with ODD and ADHD sustained more medically attended injuries than the comparison group, who were not diagnosed with a disorder (Schwebel, Speltz, Jones, & Bardina, 2002). Sex plays a role in injury risk as well; regardless of age, females are less likely to be injured than males (Kohen, Soubhi, & Raina, 2000).

Parental factors, such as mental health, marital status, alcohol use, and social support also play a role in children's injury risk (Damashek, Williams, Sher, & Peterson, 2009; Haynes, Reading, & Gale, 2003; Hippisley-Cox, Groom, Kendrick, Coupland, Webber, & Savelyich, 2002; Schwebel, Brezausek, Ramey, & Ramey, 2005). Maternal depression has been linked to a higher risk for injury. For example, Phelan et al. (2007) found that mothers with high levels of depression had children that were twice as likely to be injured as children with non-depressed mothers. Children with highly-depressed mothers were also more likely to engage in externalizing behaviors, which correlated with a higher number of injuries (Phelan, Khoury,

Atherton, & Kahn, 2007). Other research has found that the amount of social support provided to mothers of low socio-economic status (SES) has an impact on the number of accidental injuries that their children sustain. Leininger et al. (2009) found that, among families from low SES backgrounds, children with mothers with higher levels of social support experienced fewer injuries that those with lower levels of support (Leininger, Ryan, & Kalil, 2009). One study recently examined the affect of parental alcohol consumption as a predictor of childhood injury. When parents reported higher levels of alcohol consumption, not only were their children more likely to sustain injuries, but the injuries were more severe (Damashek et al., 2009).

Family factors may also play a role in children's risk for injury. Evidence has shown that children in homes with multiple children have a higher risk for accidental injury than those in a single child home. For example, researchers have found that children who died from neglect-related accidental injuries lived in homes with greater numbers of children than those who died from intentional injuries (Damashek, Nelson, & Bonner, 2013; Margolin, 1990). Nathens et al. (2000) examined the number of children in families of children admitted to the hospital for accidental injuries and found that of 3145 children injured, 66% had an older sibling (Nathens, Neff, Goss, Maier, & Rivara, 2000). A family's socio-economic status also has an impact on injury. Hippisley-Cox et al. (2002) found a socio-economic gradient for hospital admissions due to accidental injury in children younger than 15 and especially in children younger than 5. The highest rates of admission were from low SES families, specifically in the categories of pedestrian injuries, burns, and poison related injuries (Hippisley-Cox et. al., 2002). Finally, research suggests that accidental injury rates are higher in single adult households, versus homes with two or more adults (Overpeck, Jones, Trumble, Scheidt, & Bijur, 1997).

In contrast to risk factors for injury, research suggests that mothers who report engaging in more preventative measures generally have children who are injured less (Morrongiello, & House, 2004). Several studies have demonstrated the role of supervision as a preventative measure for unintentional childhood injury. One study examined supervision in the grocery store. This study found that in the grocery store, children in carts with parents that were less than 10 feet away and within eyesight were significantly less likely to sustain an injury than those with less attentive parents (Harrell, 1993). Morrongiello et al. (2004) also found that proximity to and engagement with children by their parents resulted in fewer non-minor injuries in the home (Morrongiello, Ondejko, & Littlejohn, 2004).

Given that parental supervision may be an effective method for preventing unintentional child injuries, it is important to examine what factors affect caregivers' supervision levels to better understand what factors influence mothers' supervisory behaviors. Damashek et al. (2013) found that child variables and mother's perceived risk of injury to their children was related to the amount of supervision that mothers provided. Younger child age, child gender, higher levels of injury risk behavior, and higher perceived risk of injury by mothers resulted in higher reported levels of supervision needed (Damashek, Borduin, and Ronis, 2013). Similar findings regarding child age and gender were found in a study that examined parental supervision of children crossing the street (Morrongiello, & Barton, 2009).

The number of children in the household may also influence parents' supervision of their children. Studies have suggested that parents with more than one child may be more lax (Hao, Hotz, & Jin, 2008; Leong, Hartung, Goh, & Gaylor, 2001). In particular, one study found that having an older sibling decreases the likelihood of a child having supervision at all times (Averett, Argys, & Rees, 2009).

Children may be at higher risk for injury when there are a greater number of children in the home because it is more difficult for parents to spread their attention among several children (Damashek et al., 2013).

Summary and Present Study Goals

It is evident from previous research that unintentional injuries in children pose a serious threat to children's health. Given that supervision is a known preventative measure for unintentional injuries, it is important to know what factors influence mothers' levels of supervision. Several factors have been identified as having an influence on the amount of supervision provided by parents, including the perceived risk for injury and age and gender of the child. Less direct evidence suggests that child birth order and the number of children in the home may be related to caregivers' supervision of their young children; however, these relations have not been directly investigated.

Thus, the present study will examine: (1) whether mothers' attitudes about supervision differ based on (a) the number of children in the home and (b) the birth order of the child; (2) whether mothers' reported supervision levels differ based on: (a) the number of children in the home and (b) the birth order of the child; and (3) whether children in families with more than one child sustain more injuries than children in families with fewer children. Based on previous research, I expect to find that parents do have more relaxed attitudes toward the supervision of their younger children versus their older children, and that this will also vary depending on the number of children in the home. I also expect to find that children with older siblings will also have higher injury rates than children without older siblings.

Methods

Participants

Participants and data for the present study were drawn from a larger study examining the role of supervision in children's risk for unintentional injury among at-risk families. Participants were mothers of children between the ages of 1-5 years who were reported to child protective services for child maltreatment. The participants were referred to the study by a home visiting program (Great Start) that serves parents who have been reported for child abuse or neglect. The participants' involvement in the Great Start program is voluntary.

Eligibility criteria for the study included (a) being fluent in English, and (b) being the primary caregiver for at least one child between the ages of 1 and 5. Children who had been diagnosed with autism or pervasive developmental disorder, had any any sensory disabilities (e.g., deafness, blindness), had any physical disabilities (e.g., cerebral palsy, epilepsy), or had a serious chronic illness (e.g., cancer, sickle cell anemia, severe asthma) were excluded from the study. This exclusion criterion was to ensure that the mother would not change her methods of supervision based on previous disorder, disabilities, illnesses, or hospitalization. If the mother was the primary caregiver for more than one child between the ages of 1 and 5 a child was chosen at random for inclusion in the study.

Participant Recruitment

Participants were referred from a local home visiting program (Great Start) for at-risk families. The Great Start home visitors provided a short description of the study to eligible mothers and obtained verbal consent to provide the mothers' contact information to study staff. Trained research assistants contacted potential participants by telephone and provided information about the study. If mothers indicated that they were interested in participating in the study, an in-home meeting was arranged with a study staff member and the mother to complete a consent form to allow the staff member to collect baseline data. Each of the mothers were

informed that their information would be kept confidential and were informed of the instances in which this confidentiality could be breached, such as instances of child abuse or neglect. The median age of the child participant was 2 years old.

The demographics questionnaire revealed that the majority of the mothers were married or had never been married (39.4%). The most common ethnicity reported was Caucasian (44.1%), followed by African-American (35.3%). A majority of the mothers had completed some college (38.2%). Most of the mothers in this study reported being unemployed (29.4%). A large majority of participants reported the annual family income being less than $5,000 (30%). The median number of hours per week day the child is cared for by the mother was 24 (*SD*=20.73).

Procedures

During the initial in-home meeting, the research assistant administered three questionnaires to collect information about the child's behavior, the mothers' supervision practices, and demographic data. For approximately eight weeks following the initial meeting, research assistants contacted the mothers in intervals of 3-10 days for a 10-15 minute data collection phone interview. Research assistants conducted structured interviews with mothers to gather data about injury events that the mothers' children had received during the period since the previous data collection call. For the initial interview, mothers reported injuries that were sustained during the previous week. The time intervals between remaining interviews fluctuated as the result of a procedure used to collect data about control conditions (i.e., non injury events). See the "control condition" section below for more information. Mothers were provided with optional forms to complete each time their child sustained an injury, so they could reliably recall the information during their weekly phone interview.

Injury events. During the structured telephone interview, the data collector asked the mother if her child had sustained any injuries using a list of 19 injury types. If the mother confirmed that the child did receive an injury, and the mark lasted for at least one hour or more, the data collector would then collect detailed information concerning the events surrounding the injury. The total number of injuries was recorded for each interview. If the mother was not the primary supervisor at the time of the injury, no data was taken during the phone interview as the study pertains only to injuries in which mothers were supervising.

Control conditions. Mothers were asked to answer detailed questions about times in which no injury occurred (i.e., their and their child's specific location and activities directly before they answered the phone for injury interviews). These data points serve as control conditions for the larger study. Data about mothers' supervision during these instances were used for the present study; however, the control conditions were not compared to the injury conditions. In order to create the control condition, the weekly interviews were scheduled for the same day and time as the previous week's most severe injury. For instance, if the child received his or her most severe injury at 11:30 am on a Wednesday, the research assistant would schedule the next interview for the following Wednesday at 11:30 am. If the child had not sustained an injury, a time was randomly selected for the next interview.

Measures

Injury Frequency

Injuries that were sustained by the child were recorded by the research assistant during weekly phone interviews. Unintentional injuries were defined as any mark (eg., cut or bump) that was a result of an unintentional event that could be felt by the mother or the child for at least one hour or more. Mothers were asked if their children sustained injuries in 19 different categories.

Maternal Supervision

Ratings of maternal supervision. For each injury and non-injury event, the interviewer used the structured interview to ask questions about where she and the child were prior to the injury, what each of them were doing, and whether she could see or hear the child prior to the injury. This information was then coded to obtain 3 supervision scores. There were three supervision categories, including: proximity to the child, visual supervision, and auditory supervision. For each category, interviewers used the interview data to code mothers' levels of supervision using Likert scales ranging from 1 to 5, in which "1" indicated the lowest and "5" indicated the highest level of supervision. The coding criteria are displayed in Table 1.

Maternal reports of supervision behaviors. At baseline data collection, mothers completed the Parent Supervision Attributes Profile Questionnaire (Morrongiello et al., 2004). The PSAPQ was designed to allow mothers to report on their supervisory behaviors. The measure contains four scales, including: protectiveness, supervision, fate, and risk tolerance. Questions about protectiveness address the mother's protectiveness over the child during play, supervision addresses how closely the mother stays near the child, fate assesses how much mothers believe that fate plays a role in their child's injury, and risk tolerance assesses the amount of freedom a mother gives her child. The measure has been found to have acceptable test-retest reliability and good internal consistency (Morrongiello et al., 2005).

Mothers beliefs about the need for supervision. Mothers also reported on their beliefs about appropriate levels of supervision using the Beliefs About Supervision questionnaire (BAS; Morrongiello & Hogg, 2004). The questionnaire asks mothers to indicate at what age they would feel comfortable leaving children unsupervised in various scenarios. The mothers then reported how often they would check on the child in that situation (e.g., "What is the youngest age you

would allow a child to play with toys in a fenced yard without constant supervision? For a child the age you indicated, how often would you check on him/her?") Each question was divided into two portions, part A and part B. Part A assesses the age at which the mother would allow her child to engage in a certain activity. Part B assesses the time she would allow that child to engage in that activity unsupervised. For the present study, we calculated the mean of parts A and B for the entire measure. This questionnaire was administered as a filler during data collection phone calls when interviews lasted less than 10 minutes.

Demographic Measures.

At baseline, mothers were asked to complete a demographic questionnaire. This questionnaire was used to assess family and parental characteristics, such as the number of children in the home, the mother's marital status, income level, and highest level of education, as well as information about the child, such as age, gender, and birth order.

Results

Descriptive Statistics

There were a total of 36 mothers involved in the study; however, only 23 mothers completed the BAS because it was a filler item. The median number of children in the home was 2 (*SD* = 1.50), and the average age of children in the study was 2 years old (*SD* = 0.90). The majority of children (66.7%) had at least one sibling. Mothers' self-reports of overall supervision and protectiveness on the PSAPQ were fairly high. Mothers reported an average score of 36.67 (*SD*=4.65) for protectiveness, 34.61 (*SD*=4.11) for supervision, 24.42 (*SD*=5.52) for risk tolerance, and 5.92 (*SD*=2.99) for fate. The scale ranged from 1 to 137. For fate, a lower number yielded a score indicating that the mother did not hold beliefs that the child's chance of risk was up to fate.

Examining the BAS revealed that the average age a mother reported she would leave her child unattended was 5.15 years (SD=2.96), and the average number of minutes she reported she would be willing to leave a child unattended at various ages was 10.26 minutes (*SD*=9).

The average number of accidental injuries lasting one hour or more for each child was 0.39 (*SD* = 0.47). Child gender was not associated with mothers' scores on the PSAPQ for protectiveness (t =-0.29, p =0.77), supervision (t=-1.18, p=0.25), risk tolerance (t=0.31, p=0.76), or fate (t=-0.41, p=0.69). There was also no relation between gender and the mothers' scores on the BAS for the mean age that mothers reported they would allow their children to engage in activities (t =-1.76 , p =0.10), or the mean amount of minutes they would allow their children to engage in activities (t=-0.19, p=0.34). There was also no relation between gender and the children's injury frequency (t =-1.59, p =0.13).

Overall, the mothers received high scores across all measures of supervision ratings, including proximity (*M*=4.38, *SD*=0.45), visual supervision (*M*=4.04, *SD*=0.52), and auditory supervision (*M*=4.35, *SD*=0.41; scale ranged from 1-5). Child age was not associated with injury frequency. With regard to supervision variables, it was positively associated with the mother's fate score on the PSAPQ. The older the child, the higher score the mother would receive for the fate category.

Examination of Study Objectives

Mothers' beliefs about supervision. To answer objective 1(a), whether or not mother's attitudes about supervision differed based on the number of children in the home, we conducted a t-test to examine whether scores on the PSAPQ and the BAS differed for singleton children versus those with siblings. For the PSAPQ, we found that the scores were not affected by whether the child was a singleton or had a sibling (Protectiveness: t =0.16, p=0.87, Supervision:

t=0.48, *p*=0.64, Risk Tolerance: *t*=0.77, *p*=0.45, Fate: *t*=-1.01, *p*=0.32). For the BAS, we performed 2 separate t-tests. The first t-test examined whether mothers' beliefs about the age at which she would leave a child unattended differed for singleton children versus those with siblings. The second t-test examined whether the number of minutes that mothers reported they would leave a child unattended before checking on him/her differed for singleton children versus those with siblings. There was no statistically significant relation between children's status as a singleton and the age that mothers would leave a child unattended (*t*=1.4, *p*=0.18), or the length of time she reported she would leave them unattended (*t*=-0.75, *p*=0.46). We also examined the results of the BAS and its relation to the number of children in the home and found no significant relations.

For objective 1(b), whether mothers' attitudes about supervision differed based on the birth order of the child, we examined correlations. For all birth order analyses, data on singleton children were excluded. Table 3 examines the correlation between the child's birth order and the mother's answers on the PSAPQ and BAS. The only significant correlation between these two variables is between the birth order and the mother's protectiveness score. We found that mothers reported more protectiveness for children with a higher birth order (i.e., born most recently). There was no statistically significant correlation found between the child's birth order and mothers' answers on the BAS.

Self-reported supervision behaviors. In order to answer objective 2(a), whether mothers' reported supervision levels differ based on the number of children in the home, we examined the correlation between the supervision levels recorded by the research assistants during the weekly phone interviews and the number of children in each household. The supervision levels were not related to the number of children in the home for all scales except for

auditory supervision. A negative correlation was found between the number of children in the home and the auditory supervision provided by the parents such that the more children there were in a household, the less auditory supervision the mothers provided.

For objective 2(b), whether mothers' reported supervision levels differ based on the birth order of the child, we again examined correlations (see Table 3). None of the coded supervision levels were significantly correlated with the child's birth order.

To answer objective (3), whether children in families with more than one child sustained more injuries than children in families with fewer children, we also examined the correlation table (see Table 3). The number of children in the home was not significantly correlated with the total injuries the child sustained in the study. However, there was a significant correlation between the mean age reported on the BAS and the total injuries the child sustained during the study. The younger the age the mother reported she would leave a child unsupervised, the more injuries her child was likely to sustain.

Discussion

This study addresses the need for more information on what factors affect caregiver supervision to prevent unintentional childhood injuries. Specifically, this study examined the relation of the child's birth order and the number of children in the home to the mother's attitudes towards supervision, the amount of supervision provided, and the number of injuries sustained among low-income women. There was a significant negative correlation between the number of children in the home and the self-reported auditory supervision provided by the mothers. These findings support previous studies suggesting that parents with more than one child may be more lax (Hao et al., 2008, Leong et al., 2001). However, the lower level of

auditory supervision may also be a result of an increased noise in the home due to the high number of people in the home.

With regard to the relation of birth order to mothers' supervision practices, mothers reported higher levels of protectiveness toward younger children. Birth order and the number of children in the home did not correlate with any scores of mothers' reported supervision on the PSAPQ. Birth order and the number of children in the home also had no correlation with the amount of injuries the children sustained.

Our study also found that the younger the age the mother reported willing to leave a child unsupervised on the BAS, the more injuries her child was likely to sustain. Perhaps if mothers had more information on what ages it is appropriate to leave a child unattended in certain situations, it could reduce the amount of unintentional injuries their children receive.

Study strengths and limitations

The present study examined a low-income population, which is underrepresented in the current literature. A limitation of the present study is the small sample size. Many mothers dropped out of the study before completing it. A study with a larger sample size may result in more significant findings. Another limitation is that the study only used mothers' self-reports of supervision, which may limit their accuracy as the mothers may provide responses that are biased by social desirability. A more thorough study could be done perhaps with a direct observation component in addition to self-reports.

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Table 1 *Mother, Family, and Child Characteristics*

Measure	Categories and Percents	
Child's Gender	Male	58%
	Female	41.9%
Mother's Marital Status	Married	39.4%
	Never Married	39.4%
	Live with partner	12.1%
	Separated	6.1%
	Divorced	3%
Parent's Ethnicity	Caucasian	44.1%
	African-American	35.3%
	Biracial	11.8%
	Hispanic	5.9%
	American-Indian	2.9%
Parent's Education Level	Some college	38.2%
	Some high school	26.5%
	High school	20.6%
	College	2.9%
	Post undergrad	2.9%
	9^{th} grade	2.9%

	GED	2.9%
	Trade school	2.9%
Parent's Employment Status	Unemployed	29.4%
	Homemaker	17.7%
	Part-time	11.8%
	Disabled	11.8%
	Student	5.9%
	Full-time	5.9%
	Self-employed	5.9%
	Retired	2.9%
	Medical leave	2.9%
	Babysitter	2.9%
Gross Annual Income of Household	<$5,000	30%
	$5-9,000	16.7%
	$10-14,999	10%
	$15-19,999	10%
	$20-24,999	13.3%
	$25-29,999	13.3%
	$30-34,99	3.3%
	$55,000 +	3.3%

Table 2 *Supervision Codes*

Proximity to child
5 = caregiver is physically touching child (e.g., holding child) or within arm's reach of child
4 = caregiver is out of arm's reach, within 12 feet of child, both indoors or outdoors.
3 = caregiver is more than 12 feet away from child, both in same indoor or outdoor location.
2 = caregiver is inside the house/building and child is immediately outside of the house (e. g., in the yard) or vice versa.
1 = caregiver is inside the house and child is outside of the house and the yard (e.g., down the street) or vice versa; child is in the car and mother is in a store; child is at home, mother is in another person's home or apartment.
Visual Supervision
5 = caregiver is constantly looking at child, primary activity focused around child (e.g., feeding child, playing a game with child).
4 = caregiver can see child, looking at him/her every now and then (e.g., in the same room, involved in another activity).
3 = caregiver can't see the child, but visually checking on the child every 1-15 min., or out of sight for 1-15 min.
2 = caregiver can't see child, checks on child every 20-40 min. or hasn't checked on child for 20-40 min.
1 = caregiver can't see child, checks on child every 45 min. or less often, or hasn't checked on the child for 45 min. or more.
Auditory Supervision
5 = caregiver is holding, talking with, directly playing with child, or interacting with child.
4 = caregiver is not talking with or playing with child but can easily hear child talking or making noise in a normal tone of voice but can see child.

3 = caregiver is in another area of the building or outside (or child is outside and mother is inside) and mother cannot see child but can hear child at child's normal voice level (including with the use of a baby monitor).
2 = caregiver cannot hear child's normal voice but can hear child yelling, screaming, or crying loudly.
1 = caregiver cannot hear child's yelling, screaming, or crying.

Table 3 *Intercorrelations among the mean number of children in home, injuries, the mean age and time answered on the BAS, the mean birth order, the mean score given on the PSAPQ, and the level of supervision*

	Proximity Mean	Visual Mean	Auditory Mean	Mean Age (BAS)	Mean Minutes (BAS)	Protective-ness (PSAPQ)	Supervision (PSAPQ)	Risk Tolerance (PSAPQ)	Fate (PSAPQ)	Total Injuries Mean	Number of Children in Home	Birth Order+	Child Age
Proximity Mean	-												
Visual Mean	0.61****	-											
Auditory Mean	0.71****	0.74****	-										
Mean Age (BAS)	0.54**	0.16	0.49*	-									
Mean Minutes (BAS)	0.21	-0.03	0.19	0.49*	-								
Protective-ness (PSAPQ)	0.25	0.13	0.16	0.42	0.16	-							
Supervision (PSAPQ)	0.57***	0.51**	0.38	0.51*	0.14	0.57***	-						
Risk Tolerance (PSAPQ)	-0.07	-0.13	0.12	0.17	0.17	-0.14	-0.26	-					
Fate (PSAPQ)	-0.10	0.25	-0.26	0.11	0.55**	0.17	0.06	0.11	-				
Total Injuries Mean	-0.07	0.26	0.05	-0.49*	-0.29	-0.24	-0.08	-0.10	-0.04	-			
Number of Children in Home	-0.34	-0.14	-0.45*	-0,16	0.14	-0.14	-0.23	-0.04	0.15	0.23	-		
Birth Order+	-0.30	-0.04	-0.22	0.13	0.08	-0.42*	-0.27	-0.02	-0.10	0.32	0.88****	-	
Child Age	-0.17	0.09	-0.07	0.00	0.28	0.23	0.09	0.18	0.42*	-0.07	0.35*	-0.30	-

+Birth order correlations examined a smaller sample size (n = 22) and were only conducted for non-singleton children. . *p<0.05, **p<0.01, ***p<0.001, ****p<0.0001